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mation of the daily mean temperature, above a certain fixed minimum, throughout the growing season. Such indices of temperature efficiencies for plant growth have been used largely by phenological students, notably in MERRIAM'S "law of temperature control." An advance upon this method was suggested by LIVINGSTON,[28] based upon the supposition that growth rate may follow the chemical principle of van't Hoff, doubling with each increase of temperature of 10° C., and the present publication proposes to give the indices a value based upon physiological experiment. LEHENBAUER'S[29] recent experiments upon the growth rate of maize seedlings at different temperatures affords data for the derivation of these indices which surpass those formerly proposed in taking account of the recognized principle of temperature minima, optima, and maxima; and also in showing a much greater rate of increase of index value with rising temperature between 2° and 32° C. Charts showing the climatic zonation of the United States according to each of the 3 classes of indices are suggestive and interesting for study and comparison. The third method clearly surpasses the others in correctness of principles involved, and its indices are used by the same author[30] in deriving a single index for both temperature and moisture. As a measure of the moisture conditions, the ratio of annual rainfall to annual evaporation as suggested by TRANSEAU is used, and this ratio is multiplied by the summation index of temperature efficiency for the same period, and the product is the proposed moisture-temperature index. The general scheme is a good one, and the resulting zonation of the United States is interesting in spite of the utter inadequacy of the evaporation data. It may be doubted also whether this rainfall evaporation ratio expresses the moisture conditions which determine plant growth as well as the soil moisture-evaporation ratio suggested by the reviewer. It is true that here again the lack of data will prevent the effective use of this ratio for years to come.—GEO. D. FULLER.

Taxonomic notes.—COLLINS and HOWE,[31] in studying specimens of red algae from Bermuda, southern Florida, and North Carolina, have recognized 4 new species of *Halymenia*.

SAFFORD[32] has published *Desmopsis* as a new genus of Annonaceae, to include 5 species from Mexico, Panama, and Costa Rica, that differ in several important characters from the Old World *Desmos* (*Unona* Vahl).

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[28] LIVINGSTON, B. E., BOT. GAZ. **56**:349–375. 1913.

[29] LEHENBAUER, P. A., Growth of maize seedlings in relation to temperature. Physiol. Researches **1**:247–288. 1914.

[30] LIVINGSTON, B. E., A single index to represent both moisture and temperature conditions as related to plants. Physiol. Researches **1**:421–440. *fig. 1.* 1916.

[31] COLLINS, F. S., and HOWE, M. A., Notes on species of *Halymenia*. Bull. Torr. Bot. Club **43**:169–182. 1916.

[32] SAFFORD, W. E., *Desmopsis*, a new genus of Annonaceae. Bull. Torr. Bot. Club **43**:183–193. *pls. 7–9. fig. 1.*

In the last number of HOOKER'S *Icones Plantarum* (V. 1:*pls. 3051–3075*, June 1916), the following new genera are described and figured: *Pappobolus* Blake (Compositae), *Mischopleura* Wernham (Ericaceae), *Neowollastonia* Wernham (Apocynaceae), *Dalzielia* Turrill (Asclepiadaceae), *Eriolopha* Ridley (Zingiberaceae), *Chloachne* Stapf, *Uranthoecium* Stapf, and *Danthoniopsis* Stapf (Gramineae). In addition to these 8 new genera, 7 new species are described.

KOIDZUMI,[33] in continuing his studies of Castanaceae, has recognized *Synaedrys* Lindl as a genus, extending it considerably, and has included under it 150 species transferred from *Quercus*. He also lists 234 species as remaining under *Quercus*.

RIDDLE[34] has presented a complete list of the known lichens of Bermuda, including 86 species representing 36 genera. New species are described in *Thelidium*, *Anthracothecium*, *Opegrapha*, *Bilimbia*, *Psorotichia*, and *Collema*.

WEST,[35] in continuation of his studies of algae, has described a new marine genus of the Volvocales (sub-family Carterieae), naming it *Platymonas*. He also describes new species in *Chlamydomonas* (2) and *Pteromonas*.—J. M. C.

Eocene floras.—The geographic area covered in the recent monograph by BERRY[36] is the mainland south of latitude 41 and east of longitude 100. The Antillean and Mexican regions are not included even for comparison on account of meager information in regard to them. The memoir is monumental in its character, consisting of nearly 500 quarto pages and 117 plates. A few ferns and monocotyledons are described, and no conifers. Most of the illustrations represent impressions of dicotyledonous leaves. The only anatomical illustrations are of a *Cupressinoxylon* and a *Laurinoxylon*, which are of the conventional and vague nature that too often characterizes such illustrations in publications of the U.S. Geological Survey. Apparently the Survey either should not publish anatomical data at all or intrust their preparation to some one equipped with a modern anatomical training. An important and valuable feature of the work is the attempt to correlate the presence of fossil forms with the principles of phytogeography. This appears to be very well done and is not open apparently to the grave objections which present themselves in the case of the conifers of the Mesozoic, which for the most part have been wrongly identified from their impressions and consequently cannot be used safely in

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[33] KOIDZUMI, GENICHI, On the classification of Castanaceae. II. Bot. Magazine (Tokyo) **30**:185–215. 1916.

[34] RIDDLE, LINCOLN W., The lichens of Bermuda. Bull. Torr. Bot. Club **43**:145–160. 1916.

[35] WEST, G. S., Algological notes. XVIII–XXIII. Jour. Botany **54**:1–10. *figs. 7*. 1916.

[36] BERRY, E. W., The Lower Eocene floras of southeastern North America. U.S. Geol. Survey. Professional paper 91. Washington. 1916.